Using the Cisco Web Browser

The Cisco IOS software includes a Web browser from which you can issue Cisco IOS commands. This Cisco IOS feature is accessed from the router's home page and can be customized for your business environment. For example, you can view pages in different languages and save them in Flash memory for easy retrieval. You can also configure the Web Cache Control Protocol (WCCP) to handle Web traffic and increase the efficiency of your time spent on the Web.

For a complete description of the Cisco Web browser configuration commands in this chapter, refer to the "Cisco Web Browser Commands" chapter of the *Configuration Fundamentals Command Reference*. To locate documentation of other commands that appear in this chapter, use the command reference master index or search online.

Cisco Web Browser Task List

Use of the Cisco Web browser is optional. To use and customize the Cisco Web browser, complete the tasks in the following sections:

- Use the Cisco Web Browser Interface to Issue Commands
- Customize the User Interface on a Web Browser
- Configure the Web Cache Control Protocol

Use the Cisco Web Browser Interface to Issue Commands

You can issue most of the Cisco IOS commands using a Web browser. This Cisco IOS feature is accessed by using the Cisco Web browser interface, which is accessed from the router's home page. (All Cisco routers and access servers loaded with the latest version of Cisco IOS software have a home page, which is password protected.)

From the router's home page, you click on a hypertext link titled "Monitor the Router." This link takes you to a Web page that has a "Command" field. You can type commands in this field as if you were entering commands at a terminal connected to the router. The page also displays a list of commands. You can execute these commands by clicking on them, as if you were clicking on hypertext links.

Cisco Web Browser Interface Task List

To use the Cisco Web browser interface to issue commands, use the commands in the following sections:

- Configure the Cisco Web Browser Interface
- Use the Correct Hardware and Software
- Access Your Router's Home Page
- Issue Commands Using the Cisco Web Browser Interface
  - Enter Commands Using Hypertext Links
  - Enter Commands Using the Command Field
  - Enter Commands Using the URL Window

Configure the Cisco Web Browser Interface

The Web browser interface is automatically enabled when you use ClickStart to configure a Cisco 1003, Cisco 1004, or Cisco 1005 router. You must enable the Cisco Web browser interface on all other Cisco IOS routers. Once enabled, you will be able to issue Cisco IOS commands to your router using a Web browser.

If you have any other Cisco router, you must enable the Web browser interface by altering the routers' configuration. To do this, perform the tasks in the following list. The first task is required; the remaining are optional.

- Enable the Cisco Web Browser Interface
- Change the Cisco Web Browser Interface Port Number
- Control Access to the Cisco Web Browser Interface
- Specify the Method for User Authentication

Enable the Cisco Web Browser Interface

To enable a Cisco router to be configured from a browser using the Cisco Web browser interface, use the following command in global configuration mode:

Command	Purpose
ip http server	Enable a router to be reconfigured using the Cisco Web browser interface.

Now that the Cisco Web browser interface is enabled, you can perform any of the optional tasks or proceed to configure a router using the Cisco Web browser interface.

Change the Cisco Web Browser Interface Port Number

By default, the Cisco Web browser interface uses port 80 on the router. To assign the Cisco Web browser interface to a different port, use the following command in global configuration mode:

Command	Purpose
ip http port *number*	Assign a port number to be used by the Cisco Web browser interface.

Control Access to the Cisco Web Browser Interface

To control which hosts can access the HTTP server used by the Cisco Web browser interface, use the following command in global configuration mode:

Command	Purpose
ip http access-class {*access-list-number* | *name*}	Control access to the HTTP server used by the Cisco Web browser interface.

Specify the Method for User Authentication

To specify how HTTP server users are authenticated, use the following command in global configuration mode:

Command	Purpose
ip http authentication {**aaa** | **enable** | **local** | **tacacs**}	Specify how HTTP server users are authenticated.

Use the Correct Hardware and Software

To use the Cisco Web browser interface, your computer must have a World Wide Web browser. The Cisco Web browser interface works with most browsers, including Netscape Navigator. Your Web browser must be able read and submit forms. The original versions of Mosaic might have problems using the Cisco Web browser interface, because they either cannot submit forms or have difficulty doing so.

The computer must be connected to the same network that the router or access server is on.

Access Your Router's Home Page

Cisco IOS software allows users with a default privilege level of 15 to access a predefined home page for a router or access server. If you have been assigned a privilege level other than 15, Cisco IOS Release 11.3 or later software allows you to issue Cisco IOS commands from a Web page where the commands defined for your specific user privilege level will be displayed.

To access the home page for your router or access server with a default privilege level of 15, perform the following steps:

Step 1 Enter the following command in the URL field of your Web browser and press return: **http://***router-name***/**. (For example, to access a Cisco router named *cacophony* with a default privilege level of 15, type http://cacophony/.)The browser then prompts you for the password.

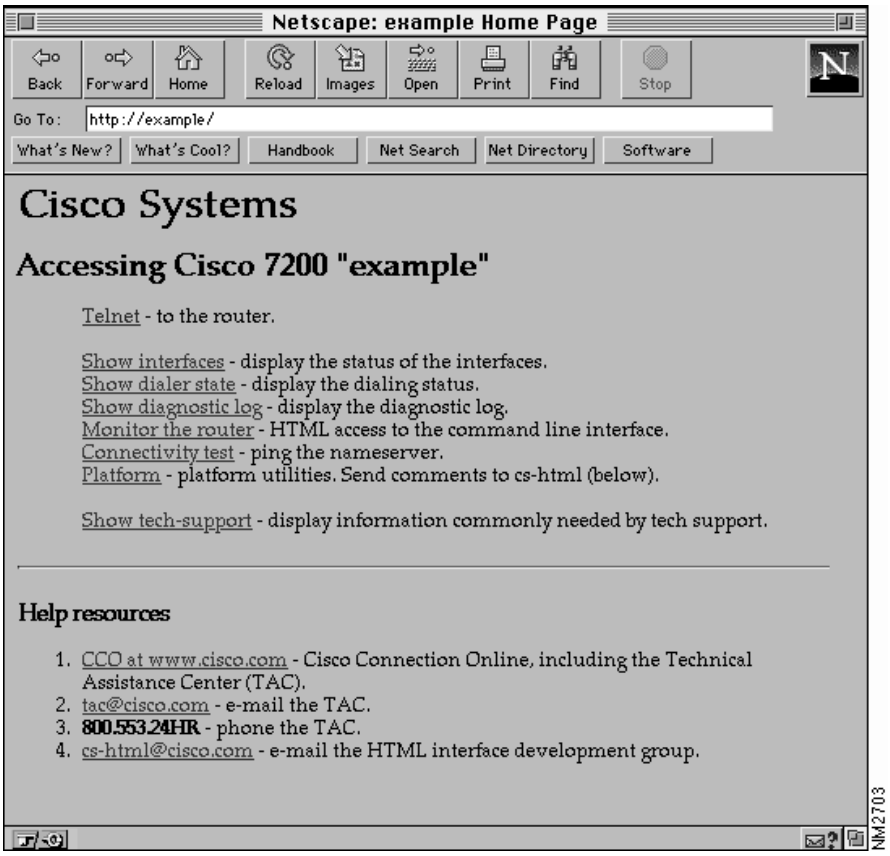
Step 2 Enter the password.

Note The name and password for your router and access server are designated in their configuration. Contact your network administrator if you do not have this information.

The browser should display the home page for your router or access server.

The router's home page looks something like the Cisco 7200 home page shown in Figure 8.

Figure 8 Example of a Home Page for a Cisco 7200


Netscape: example Home Page
Back
Forward
Home
Reload
Images
Open
Print
Find
Stop
Go To:
http://example/
What's New?
What's Cool?
Handbook
Net Search
Net Directory
Software
Cisco Systems
Accessing Cisco 7200 "example"
Telnet - to the router.
Show interfaces - display the status of the interfaces.
Show dialer state - display the dialing status.
Show diagnostic log - display the diagnostic log.
Monitor the router - HTML access to the command line interface.
Connectivity test - ping the nameserver.
Platform - platform utilities. Send comments to cs-html (below).
Show tech-support - display information commonly needed by tech support.
Help resources
1. CCO at www.cisco.com - Cisco Connection Online, including the Technical Assistance Center (TAC).
2. tac@cisco.com - e-mail the TAC.
3. 800.553.24HR - phone the TAC.
4. cs-html@cisco.com - e-mail the HTML interface development group.
NM2703

To access a router Web page for a preassigned privilege level other than the default of 15, perform the following steps:

Step 1 Enter the following command in the URL field of your Web browser and press return: **http://***router-name***/level/***level***/***mode***/***command*. (For example, to request a user privilege level of 12 on a Cisco router named *cacophony*, type http://cacophony/level/12/exec).The browser then prompts you for the username and/or password.

Step 2 Depending on your authentication method, enter your username and/or password and press return. The Web browser should display a Web page specific to your user privilege level, mode, and the command you have requested.

Table 10 lists the URL arguments you must use when requesting a Web page.

Table 8 Description of the URL Arguments

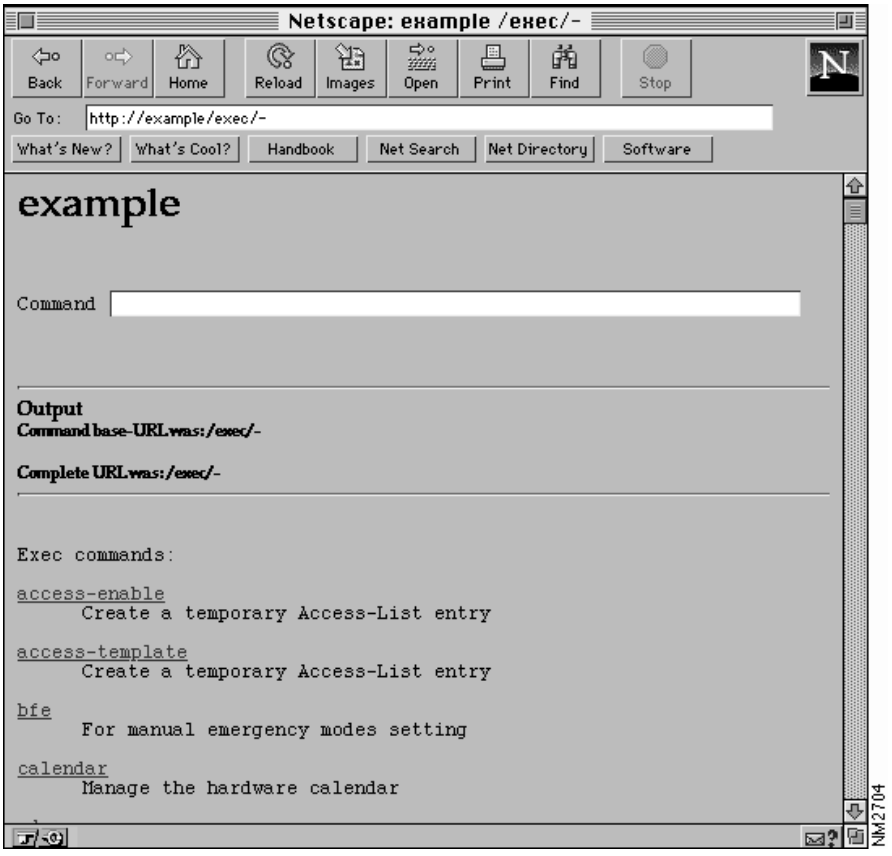
Argument	Description
router-name	Name of the router being configured.
level	The privilege level you are requesting.
mode	The mode the command will be executed in, such as exec, configure, and interface.

Argument	Description
command	(Optional) The command you want to execute. If you specify a command, your browser will display a Web page showing the results of the requested command. If you do not specify a command in the URL, your browser will display a Web page listing all of the commands available for your privilege level.

Issue Commands Using the Cisco Web Browser Interface

To issue commands using the Cisco Web browser interface, click the link "Monitor the router" in the first list of hypertext links on the home page. This displays the Web page shown in Figure 9.

Figure 9 The "Command" Field Web Page for a Router Named "example"



Enter Commands Using Hypertext Links

To enter a command using hypertext links, scroll through the commands listed at the bottom of the screen and click the one you want to execute. If the link is a complete command, it is executed. If the command has more parameters, another list of command hypertext links is displayed. Scroll through this second list and click the one you want to execute.

If the command is a request for information, like a **show** command, the information is displayed in the Web browser window.

If the command requires a variable, a form in which you can enter the variable is displayed.

Enter Commands Using the Command Field

Entering the command in the command field is just like entering it at a terminal console. Enter the command using the syntax documented in the Cisco IOS command reference. If you are uncertain of the options available for a particular command, type a question mark (**?**).

For example, entering **show ?** in the command field displays the parameters for the **show** command. The Cisco Web browser interface displays the parameters as hypertext links. To select a parameter, you can either click on one of the links, or you can enter the parameter in the command field.

Enter Commands Using the URL Window

You can issue a command using the URL window for the Web browser.

For example, to execute a **show configuration** command on a router named *example*, you would enter the following in the URL window:

```
http://example/exec/show/configuration
```

The Web browser then displays the configuration for the "example" router. To save effort, modify the URL in the URL window in the browser control bar instead of retyping the entire URL.

The difference between entering a command in the command field and entering a command in the URL window is that in the URL window, command modes, keywords, and options should be separated by slashes, not spaces.

Customize the User Interface on a Web Browser

You can customize HTML pages to display Cisco IOS command output and Cisco IOS platform-specific variables (for example, a router host name or router address typically used in router setup pages) for a Web browser. You can display this information using HTML formatted Server Side Includes (SSIs) that you insert into your custom HTML pages. SSIs are a Cisco IOS software feature described in the following sections.

Definition of SSIs

SSIs are HTML formatted commands or variables that you insert into HTML pages when you customize Cisco IOS platform configuration pages for a Web browser. These SSI commands and SSI variables display Cisco IOS command output and Cisco IOS platform-specific variables.

The Cisco IOS software supports two HTML SSI commands defined for customizing HTML pages: the SSI EXEC command and the SSI ECHO command. The HTML format of the SSI EXEC command is **<!--#exec cmd="***xxx***"-->**, and the HTML format of the SSI ECHO command is **<!--#echo var="***yyy***"-->**. (See the section "Customize HTML Pages Using SSIs" later in this chapter for a description of how to use these commands).

In addition to the two SSI commands, the Cisco IOS software supports several SSI variables defined for customizing HTML pages. SSI variables are used with the SSI ECHO command. There is one SSI variable defined for all Cisco IOS platforms (SERVER_NAME) and other SSI variables specifically defined for ISDN, Frame Relay, and asynchronous serial platforms. The format and a description of all the available SSI variables are provided in Table 5. (See the section "Customize HTML Pages Using SSIs" later in this chapter for a description of how to use these SSI variables with the SSI ECHO command).

The SSI EXEC command is supported on all platforms. The SSI ECHO command, used with SSI variables, is supported on all platforms listed in Table 11.

Table 9 Description of SSI Variables

HTML Format of SSI Variable	Description of Variable Displayed on Browser Page	Cisco IOS Platform(s) This SSI Is Supported On
SERVER_NAME	Host name of the HTTP server.	All Cisco IOS platforms
EZSETUP_PASSWORD	Enable password (currently left blank).	Cisco 1000 series
EZSETUP_PASSWORD_VERIFY	Repeat of the enable password to verify accuracy (currently left blank).	Cisco 1000 series
EZSETUP_ETHERNET0_ADDRESS	IP address of the Ethernet 0 interface.	Cisco 1000 series
EZSETUP_ETHERNET0_MASK	IP mask of the Ethernet 0 interface.	Cisco 1000 series
EZSETUP_DNS_ADDRESS	DNS address used by the router.	Cisco 1000 series
EZSETUP_STANDARD_DEBUG_Y	Standard debug variable. Returns CHECKED if set to TRUE; otherwise, it is blank.	Cisco 1000 series
EZSETUP_STANDARD_DEBUG_N	Standard debug variable. Returns CHECKED if set to FALSE; otherwise, it is blank.	Cisco 1000 series
EZSETUP_ISDN_SWITCHTYPE	ISDN Switch type.	Cisco 1003 and Cisco 1004
EZSETUP_ISDN_REMOTE_NAME	Name of remote ISDN system.	Cisco 1003 and Cisco 1004
EZSETUP_ISDN_REMOTE_NUMBER	Phone number of remote ISDN system.	Cisco 1003 and Cisco 1004
EZSETUP_ISDN_CHAP_PASSWORD	CHAP password of remote ISDN system.	Cisco 1003 and Cisco 1004
EZSETUP_ISDN_SPID1	ISDN SPID 1.	Cisco 1003 and Cisco 1004
EZSETUP_ISDN_SPID2	ISDN SPID 2.	Cisco 1003 and Cisco 1004
EZSETUP_ISDN_SPEED_56	Speed of ISDN interface. Returns CHECKED if set to 56k; otherwise, it is blank.	Cisco 1003 and Cisco 1004
EZSETUP_ISDN_SPEED_64	Speed of ISDN interface. Returns CHECKED if set to 64k; otherwise, it is blank.	Cisco 1003 and Cisco 1004
EZSETUP_FR_ADDRESS	Frame-Relay IP address.	Cisco 1005
EZSETUP_FR_MASK	Frame-Relay IP mask.	Cisco 1005
EZSETUP_FR_DLCI	Frame-Relay DLCI.	Cisco 1005
EZSETUP_ASYNC_REMOTE_NAME	Name of remote system.	Cisco 1005
EZSETUP_ASYNC_REMOTE_NUMBER	Phone number of remote system.	Cisco 1005
EZSETUP_ASYNC_CHAP_PASSWORD	CHAP password for remote system.	Cisco 1005
EZSETUP_ASYNC_LINE_PASSWORD	Async line password.	Cisco 1005
EZSETUP_ASYNC_MODEM_SPEED	Speed of async modem (either 14.4k or 28.8k).	Cisco 1005
EZSETUP_ASYNC_MODEM_SPEED_144K	Returns CHECKED if async modem speed is 14.4k; otherwise it is blank.	Cisco 1005
EZSETUP_ASYNC_MODEM_SPEED_288K	Returns CHECKED if async modem speed is 28.8k; otherwise it is blank.	Cisco 1005

How SSIs Work

Once you have designed a set of HTML pages that include SSIs, you can copy these pages to a Cisco IOS platform's Flash memory. (See the section "Copy HTML Pages to Flash Memory" for instructions on storing HTML pages in Flash memory later in this section.) When you retrieve these pages from Flash memory and display them using a Web browser, any SSI command that was designed into these pages will either display Cisco IOS command output or display a current variable or identifier defined in Table 9. For example, the SSI ECHO command with the variable SERVER_NAME will display the current host name of the HTTP server you are using, and the SSI ECHO command with the variable EZSETUP_ISDN_SWITCHTYPE will display the current ISDN switch type you are using.

Benefits of Customizing Web Pages with SSIs

Using SSIs, you can customize one set of international HTML pages (for example, in Japanese) and copy these pages to Flash memory on multiple Cisco IOS platforms. When you retrieve these pages from the Flash memory of a Cisco IOS platform, current variables and identifiers associated with the platform you are currently using are displayed. SSIs save you from having to duplicate these international pages (considered relatively large images that contain 8-bit or multibyte characters) and store them in the source code for each platform you are using. (Refer to Table 9 to determine which Cisco IOS platforms support which SSIs variables.)

User Interface Customization Task List

To customize your HTML pages and view them for the user interface, perform the tasks in the following sections:

- Customize HTML Pages Using SSIs
- Copy HTML Pages to Flash Memory
- Enable the Cisco Web Browser Interface
- View Your HTML File Containing SSIs
- Display 8-Bit and Multiple Character Sets

Customize HTML Pages Using SSIs

When you are customizing an HTML page for a Web browser, type **<!--#exec cmd="***xxx***"-->** in your HTML file where you want Cisco IOS command output to appear on the browser page. Replace *xxx* with a Cisco IOS command that can be executed in the router's EXEC mode. (See the "SSI EXEC Command Example" section later in this chapter.)

When you are customizing an HTML page for a Web browser, type **<!--#echo var="***yyy***"-->** in your HTML file where you want a value or identifier associated with a particular Cisco IOS platform (for example, an ISDN or Frame Relay platform) to appear on the browser page. Replace *yyy* with an SSI variable described in Table 9. (See the "SSI ECHO Command Example" section later in this chapter.)

Copy HTML Pages to Flash Memory

Once you have customized HTML pages using SSIs, copy your HTML pages to a Cisco IOS platform's Flash memory. To do this, save your pages using a filename appended with ".shtml" (for example, *filename*.shtml) and copy your file to Flash memory using a **copy** command (for example, the **copy tftp flash** command). (Refer to the Cisco IOS command references for a **copy** command compatible with your Cisco IOS platform.)

Enable the Cisco Web Browser Interface

To view the HTML pages you have just customized, you must first enable the Cisco Web browser interface. To enable the Cisco Web browser interface, use the following command in global configuration mode:

Command	Purpose
ip http server	Enable the Cisco Web browser interface.

Refer to the section "Configure the Cisco Web Browser Interface" earlier in this chapter for further information on configuring the Cisco Web browser interface.

View Your HTML File Containing SSIs

Once the Cisco Web browser interface is enabled, you can retrieve your HTML page from Flash memory and view it on the Cisco Web browser by typing the URL **http://***router***/flash/***filename* in the URL window. Replace *router* with the host name or IP address of the current Cisco IOS platform you are using, and replace *filename* with the name of the file you created with ".shtml" appended. For example, http://myrouter/flash/ssi_file.shtml.

Display 8-bit and Multibyte Character Sets

Your Cisco IOS platform will automatically display 8-bit and multibyte character sets and print the ESC character as a single character instead of as the caret and bracket symbols (^[) when the Cisco Web browser interface is enabled with the **ip http server** command.

If you are Telneting to a Cisco IOS platform, use the following command in line configuration mode to display 8-bit and multibyte international character sets and print the ESC character as a single character instead of "^[":

Command	Purpose
international	Configure a router to display 8-bit and multibyte international character sets and print the ESC character as a single character instead of "^[" when Telneting to a Cisco IOS platform.

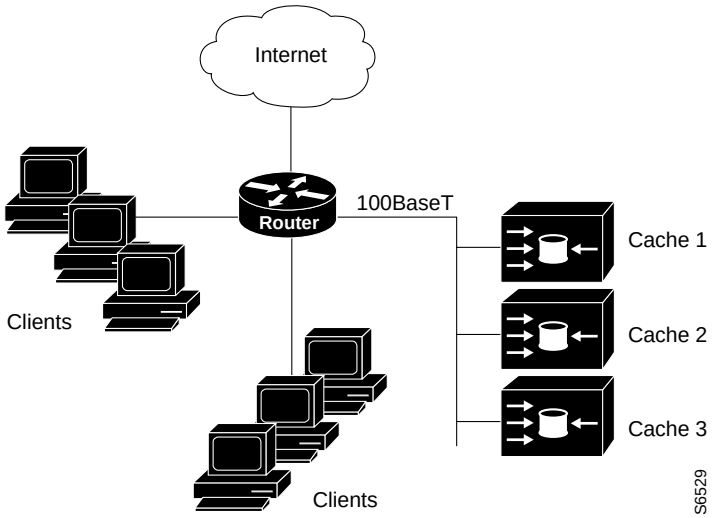
If you are Telneting to a Cisco IOS platform, use the following command in EXEC mode to display 8-bit and multibyte international characters sets and print the ESC character as a single character instead of "^[" for the current Telnet session:

Command	Purpose
terminal international	Configure a router to display 8-bit and multibyte international character sets and print the ESC character as a single character instead of "^[" when Telneting to a Cisco IOS platform for the current session.

Configure the Web Cache Control Protocol

The Web Cache Control Protocol (WCCP) feature allows you to use a Cisco Cache Engine to handle Web traffic, thus reducing transmission costs and downloading time. This traffic includes user requests to view pages and graphics on World Wide Web servers, whether internal or external to your network, and the replies to those requests. Figure 10 shows a sample WCCP network configuration.

Figure 10 Sample Cisco Cache Engine Network Configuration



When a user (client) requests a page from a Web server (located in the Internet, in this case), the router sends the request to a Cisco Cache Engine (Cache 1, Cache 2, or Cache 3). If the cache engine has a copy of the requested page in storage, the engine sends the user that page. Otherwise, the engine gets the requested page and the objects on that page from the Web server, stores a copy of the page and its objects (caches them), and forwards the page and objects to the user.

WCCP transparently redirects HTTP requests from the intended server to a Cisco Cache Engine. End users do not know that the page came from the cache engine rather than the originally requested Web server.

The *Using Cisco Cache Engine* publication contains detailed information about the Cisco Cache Engine and discusses alternative network configurations.

Benefits of Using WCCP

Web caches reduce transmissions costs and the amount of time required to download Web files. If a client requests a Web page that is already cached, the request and data only have to travel between the Cisco Cache Engine and the client. Without a Web cache, the request and reply must travel over the Internet or wide-area network. Cached pages can be loaded faster than non-cached pages and do not have to be transmitted from the Internet to your network.

Cisco IOS support of WCCP provides a transparent Web cache solution. Users can benefit from Web proxy caches without having to configure clients to contact a specific proxy server in order to access Web resources. Many Web proxy caches require clients to access Web resources through a specific proxy Web server rather than using the originally requested Web server URL. With WCCP, the clients send Web requests to the desired Web server URL. Cisco IOS routers intelligently intercept HTTP requests and transparently redirect them to a Cisco Cache Engine.

When a Web Cache Control Protocol-enabled router receives an IP packet, the router determines if the packet is a request that should be directed to a Cisco Cache Engine. The router looks for TCP as the protocol field in the IP header and for 80 as the destination port in the TCP header. If the packet meets these criteria, it is redirected to a Cisco Cache Engine.

Through communication with the Cisco Cache Engines, the routers running WCCP are aware of available cache engines.

Platforms Supported

WCCP is supported on the following platforms:

- Cisco 2500 series
- Cisco 3600 series
- Cisco 4000 series
- Cisco 4500 series
- Cisco 4700 series
- Cisco 5200 series
- Cisco 5300 series
- Cisco 7000 series with RSP7000
- Cisco 7200 series
- Cisco 7500 series
- Catalyst 5000

Web Cache Control Protocol Configuration Task List

To use the Web Cache Control Protocol, IP must be configured on the interface connected to the Internet and the interface connected to the Cisco Cache Engine.

The interface connected to the Cisco Cache Engine must be an Ethernet or Fast Ethernet interface.

To configure the Web Cache Control Protocol on the router, you must use the following tasks. The first task is required, while the rest are optional.

- Enable the Web Cache Control Protocol on the Router
- Monitor the Web Cache Control Protocol

Enable the Web Cache Control Protocol on the Router

To enable an interface to redirect Web traffic to the Cisco Cache Engine using the Web Cache Control Protocol, use the following commands beginning in global configuration mode:

Step	Command	Purpose
1	**ip wccp enable**	Enable the router to use the Web Cache Control Protocol.
2	**ip wccp redirect-list** {*number* | *name*}	(Optional) Specify the redirect access list. Only packets that match this access list are redirected. If you do not configure this command, all Web-based packets are redirected.
3	**interface** *interface*	Enter interface configuration mode.
4	**ip web-cache redirect**	Configure the interface connected to the Internet to redirect Web traffic to the Cisco Cache Engine.
5	**ip route-cache same-interface**	(Optional) If the client and a Cisco Cache Engine are located on the same network, configure the router to use the fast switching path on the interface.
6	**end**	Exit configuration mode.
7	**copy running-config startup-config**	Save the configuration.

Monitor the Web Cache Control Protocol

To monitor the Web Cache Control Protocol, use any of the following commands in EXEC mode:

Step	Command	Purpose
1	**show ip wccp**	Display global Web Cache Control Protocol statistics.
2	**show ip wccp web-caches**	Display information about all known Cisco Cache Engines.
3	**show ip interface**	Show whether Web cache redirecting is enabled on an interface.

The **show ip wccp** and **show ip wccp web-caches** commands display a count of the number of packets redirected. Use the **clear ip wccp** EXEC command to clear this counter.

What to Do Next

To use WCCP, the Cisco Cache Engine must be properly configured. Refer to the *Using the Cisco Cache Engine* publication for details on configuring the Cisco Cache Engine. Keep these important points in mind:

- The IP address of the router must be configured as the home router for the Cisco Cache Engine.
- Versions of software on the Cisco Cache Engines must be compatible with the router.
- The Cisco Cache Engines must not have their packets encrypted or compressed and should be part of the “inside” Network Address Translation if one is present.
- Placing a Cisco Cache Engine beyond a Web-cache-redirect enabled interface and along the route to the server will not cause the IP route cache to be populated with an entry.

Cisco Web Browser Configuration Examples

This section provides the following configuration examples:

- SSI EXEC Command Example
- SSI ECHO Command Example
- WCCP Configuration Example

SSI EXEC Command Example

The following is an example of the HTML SSI EXEC command used to display the Cisco IOS **show users** EXEC command output:

Contents of the HTML file in Flash memory:

```
<HTML>
<HEAD>
<TITLE> SSI EXEC Command Example</TITLE>
</HEAD>
<BODY>
This is an example of the SSI EXEC command
<HR>
<PRE>
<!--#exec cmd="show users"-->
</PRE>
<HR>
</BODY>
</HTML>
```

Contents that the Web browser receives when the HTML file is retrieved from Flash memory:

```
<HTML>
<HEAD>
<TITLE> SSI EXEC Command Example</TITLE>
</HEAD>
<BODY>
This is an example of the SSI EXEC command
<HR>
<PRE>

Line    User  Host(s) Idle  Location
0 con 0       idle      12
2 vty 0       idle       0  router.cisco.com

</PRE>
<HR>
</BODY>
</HTML>
```

SSI ECHO Command Example

The following is an example of the HTML SSI ECHO command used with the SSI variable *SERVER_NAME* (see Table 5) to display the Cisco IOS platform host name *rain*:

Contents of the HTML file in Flash memory:

```
<HTML>
<HEAD>
<TITLE>SSI Echo Command Example</TITLE>
</HEAD>
<BODY>
This is an example of the SSI echo command
<HR>
<!--#echo var="SERVER_NAME"-->
<HR>
</BODY>
</HTML>
```

Contents that the Web browser receives when the HTML file is retrieved from Flash memory:

```
<HTML>
<HEAD>
<TITLE>SSI Echo Command Example</TITLE>
</HEAD>
<BODY>
This is an example of the SSI echo command
<HR>
rain
<HR>
</BODY>
</HTML>
```

WCCP Configuration Example

The following example configures a router to support the Web Cache Control Protocol and to redirect Web-related packets from Ethernet interface 0 to the Cisco Cache Engine:

```
Router# configure terminal
Router(config)# ip wccp enable
Router(config)# interface Ethernet 0
Router(config-if)# ip web-cache redirect
Router(config-if)# end
Router#
%SYS-5-CONFIG_I: Configured from console by console.
Router# copy running-config startup-config
```

After the router has been configured, use the **show ip wccp web-cache** command to verify that Web Cache Control Protocol is enabled and aware of Cisco Cache Engines. In this example, the **show ip wccp web-cache** command is entered immediately after the router has been configured. After a few seconds, the cache engine becomes usable, as seen in the second output.

```
Router# show ip wccp web-cache

WCCP Web-Cache information:
        IP Address:             192.168.51.102
        Protocol Version:       0.3
        State:                  NOT Usable
        Initial Hash Info:      FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
                                FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
        Assigned Hash Info:     00000000000000000000000000000000
                                00000000000000000000000000000000
        Hash Allotment:         0 (0.00%)
```

```
        Packets Redirected:    0
        Connect Time:          00:00:06

Router# show ip wccp web-cache

WCCP Web-Cache information:
        IP Address             192.168.51.102
        Protocol Version:      0.3
        State:                 Usable
        Initial Hash Info:     FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
                               FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
        Assigned Hash Info:    FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
                               FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
        Hash Allotment:        256 (100.00%)
        Packets Redirected:    0
        Connect Time:          00:00:31
```